

Facility: Crystal Technology, Inc.

Note Title

7/12/2005

Facility Address: 1040 E. Meadow Circle  
Palo Alto, CA

Mailing Address:

EPA ID Number: CA0980882369

Date of Investigation: 7/13/05

EPA Representatives: Clint Sciter  
Kaoru Morimoto

Facility Representatives:  
Al Toy

Background:

Number of employees 120

Here since 1967, 8

Operating hours

Bldg 1040 - 1 shift 1051-24/7.  
1035 - 2 shifts.

Generator status LQ6

SBREFA

Process info:

Have 3 buildings

- 1st one is 1051 - Growth

- combine lithium carbonate and niobium pentoxide to growth lithium niobate crystals (powders),

Isopropyl

wipes are alcohol

- used for acousto-optical devices

- high end electronics

- lasers, optical scanners,

- apply pressure and heat to turn it "on/off" - change crystalline structure

- powders put into crucibles, put into furnace

- insert "seed rod" which has tiny crystal into crucible.

- seed rod slowly raised up -

- crystal grows around seed

- 100% of powder turns into

## crystal

- HW is solvent wipes and dyes to check crucibles.
- hydrochloric (nitric acids also gen. Used to check crucibles.)  
solvent based.
- have ~ 120 ovens.
- solvent wipes in 55 gal drums - 1 every 3 months.

## 2nd bldg. 1035

- slice bldg to make chip substrate
- sliced like very thin "bologna"
- water used as lubricant in the machines.
  - amorphous silica added to H<sub>2</sub>O (hard)
- both sides of wafers then grinded (amorphous silica)
- Hydrofluoric acid baths
  - 10% bench
  - 100% bench (actually 40%)
- bath 1 } HW
- bath 2 - primary rinse } HW
- bath 3 - secondary rinse - discharged to sanitary sewer.

generate 2k55 of aqueous H<sub>2</sub>O<sub>2</sub> waste weekly.

- Acid etchs surface of water.
- makes sure they are all uniform.
- Then go to bldg 1040.

Typically have 2 drums to pick up weekly  
(Wed - Wed.)  
Have a satellite area.

Have 2 HW storage areas - one for acids and one for solvents.

Bldg 1040 - shipping and receiving  
- also administration.

Also have assembly area. Everything  
but crystals come here  
Do some soldering - very little generated.

Ultimate products are devices such as  
- acousto-optic modulator.

Generate mostly solvent wiper (acetone) <sup>→ Q tips mostly</sup>  
- opticlear (veg. based solvent)

Installed solvent recovery still recently.  
Generate approx. 55 gallons solvents  
weekly (before).

No still bottoms generated yet.

Have solvent bench where parts are  
soaked.

Also have 5% hydrofluoric acid bench  
which is rarely used.

Waste photoresist used for some  
crystals - very small amount generated

From 2001 BRS  
Lab pack not generated in a long time

Site inspection:

Bldg 1051

- crucible prep.

- crucibles are made here. - from platinum 100%

- used 1-2 times then recycled.

waste generated from baths + wipes.

bath - used to clean crucibles (edges used to check for cracks)

- use mostly nitric acid

- SAA under sink "carboys"

- all empty.

Waste moved from carboys to drums outside.

Photo 1 - 20 gallon wipe container.

- Furnace room

- many furnaces

- only generate wipes.

- wipes put in 55 gallon drum in "brick room"

Drum is open top w/ Justrite safety

drum cover. SAA

Photo 2, 3 Label also says DD11 (silver) and acetone.

Outside - solvent storage cage

- also used for product storage.

1X55 mixed solvent waste. dtd 4/11/05  
F003.

Photo #4, 5

will be shipped next week.

photo 6 1X85 univ. waste bulbs - very faded  
7 1X85 not labeled as univ. waste.

photo 8 1X55 dtd 6/29 F003 waste.

photo 9 1X5 oil waste + water Not labeled used

2X5 " not labelled " oil

from machines in 1035

Next to shed (between the two)

1 X 55 poly valtron rinse.

- drum "sucked in"

Photo 10

- Al assuming it is a waste.

Acid waste shed.

- shed empty.

Every person who comes out has a cell phone.

Fire extinguisher nearby,

Bldg 6035

Valtron - potassium hydroxide machine

49% HF acid used

- waste generated when empty a bath.

3rd bath - put in holding tank.

- measure pH.

- If outside limit no discharge, diversion tank.

- batch tank.

Bldg 1040 HM storage. (outside)

1X55 Std 6/13/05.

photo 11, 12

D001, F003, F005

— phone and fire extinguisher available

Bldg 1040 inside

Crystals made here instead of waters.  
↳ called "boutes"

Generally into rectangles but can be any shape

Use acetic acid here to demount crystal (from stand, etc.)

Polishing room — no waste generated.

crystal cleaning (soak)  
Solvent bench. Rm C3A

Parts soaked in acetone. - cleaned.  
sprayed with dye penetrant.  
- used as protective coating and bar  
as method to see

1X5 gal. wipes container. F003.  
- emptied daily. photo 13-15

1X5 acid container  
- emptied daily.

1X55 F003 Photo 16, 17.

1X5 gal next to photo resist unit.

vacuum deposition

B6A - vapor deposition of metals to give mirror backing.

Mini acid bench and mini solvent bench.  
(clean room)

lx 5 spent acid

lx 5 spent solvent.

photo 18, 19.

AO Assembly (Acousto-optical)

use solvents on Q-tips to wipe parts,  
put into 5-gal empty overnight containers  
and then

Generate  $\frac{3}{4}$  of solid flamm. waste  
(3rd largest waste stream)

## Records:

Biennial report: 2003 OK

Weekly inspections:

Manifests:

LDR notifications:

Training plan

- training records:

- job titles:

- position descriptions:

} will send in to letter

Contingency plan:

- evac. route:

- equip. list:

- equip. capability:

} OK

In plan and other documents.

